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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,626	09/05/2006	Toshiaki Kawashima	S015-5846 (PCT)	3315
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Bruce L. Adams Adams & Wilks 17 Battery Place Suite 1231 New York, NY 10004			EXAMINER SCHEUERMANN, DAVID W	
			ART UNIT 2834	PAPER NUMBER
			MAIL DATE 01/07/2010	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/591,626

**Applicant(s)**

KAWASHIMA, TOSHIKI

**Examiner**

DAVID W. SCHEUERMANN

**Art Unit**

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11/19/2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 2, 5, 6 and 12-35 is/are pending in the application.
- 4a) Of the above claim(s) 2, 5, 6, 14-16, 19-21 and 23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 12, 13, 17, 18, 22, 24, 26, 27, and 29-35 is/are rejected.
- 7) ☒ Claim(s) 25 and 28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 9/5/2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments and amendment to the claims filed 11/18/2009 have been fully considered but they are not persuasive. Applicant asserts that:

Stated otherwise, in Veillette the current flows bi-directionally (i.e., in two directions), while amended claim 1 requires a supply current or a regenerated current that flows unidirectionally (i.e., in one direction). Since Veillette does not disclose or describe a supply current or a regenerated current that flows through the electromagnets in one direction, the reference cannot anticipate amended independent claim 1.

The Examiner disagrees with this assertion, in part. While the examiner agrees with the statement, "...in Veillette the current flows bi-directionally (i.e., in two directions)...."; this does not preclude the possibility of the current flowing in one direction (at a time) as claimed. Accordingly, the rejection is proper and is maintained.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 12, 13, 26, 27, 29, 30 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Veillette, US 3937533. Veillette, US 3937533 shows:

Re claim 1, a magnetic bearing device, (unless otherwise noted see marked up figure 2 below)

comprising:

a rotor: (14, see figure 1)

a plurality of electromagnets (N1, N2) for controlling a radial position and/or an axial position of the rotor;

a power source (E, see figure 2) for supplying power to the electromagnets;

a common node (64b, see figure 2) commonly connected to each one end of the electromagnets;

switch means (T2, T5) for switching a voltage of the common node (64b, see figure 2);

and excitation control means (T4, T6) for controlling excitation of each of the electromagnets by a supply current that is supplied from the other end (64a, 64c) of one of the electromagnets to a negative electrode of the power source and that flows through the electromagnets in one direction (at a time), or by a regenerated current that is regenerated from the other end (64a, 64c) of one of

the electromagnets to a positive electrode (via D1, D3) of the power source and that flows through the electromagnets in one direction (at a time);

wherein the switch means includes:

a first switch element for connecting and disconnecting between the positive electrode (T2) and the common node (64b, see figure 2); and

a first rectifier element (D5) for causing a current to flow from the negative electrode to the common node (64b, see figure 2); and

wherein the excitation control means includes:

a second switch element (T4, T6) for connecting and disconnecting between the other end (64a, 64c) of one of the electromagnets and the negative electrode; and

a second rectifier element (D3, D1) for causing a current to flow from the other end (64a, 64c) of one of the electromagnets to the positive electrode.

Re claim 27, a magnetic bearing device, (unless otherwise noted see marked up figure 2 below)

comprising:

a rotor: (14, see figure 1)

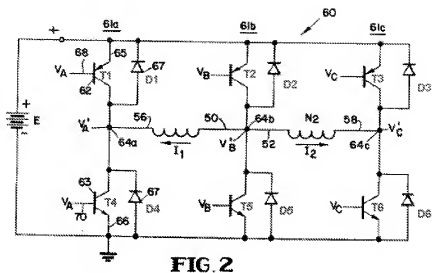
a plurality of electromagnets (N1, N2) for controlling a radial position and/or an axial position of the rotor;

a power source (E, see figure 2) for supplying power to the electromagnets;

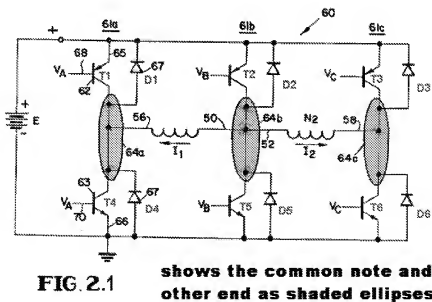
a common node (64b, see figure 2) commonly connected to each one end of the electromagnets;

a switching circuit that switches a voltage of the common node (64b, see figure 2), the switching circuit including a first switch element (T2) for connecting and disconnecting between one end of the power source (E "+", see figure 2) and the common node (64b, see figure 264a, 64c), and a first rectifier element (D5) connected between the other end of the power source (E "-", see figure 2) and the common node (64b, see figure 2); and

an excitation control circuit (T1-T6) that controls excitation of each of the electromagnets by a supply current that flows through the electromagnets in one direction (at a time) or a regenerated current that flows through the electromagnets in one direction (at a time) , the excitation control circuit including a second switch element (T4, T6) that connects and disconnects between the other end (64a, 64c) of one of the electromagnets and the other end of the power source (E "-", see figure 2) , and a second rectifier element (D1, D3) connected between the other end (64a, 64c) of one of the electromagnets and the one end of the power source (E "+", see figure 2) .



The following rendition shows the common node and the "other end" as shaded ellipses for clarity.



Re claims 12 and 30, see figure 3.

Re claims 13 and 31, note that D5 is in parallel with T5 as shown in the figure, supra.

Re claims 26 and 29, note that second switch element (T4, T6) and second rectifier element (D3, D1) are formed of a single component as shown in figure 2, supra.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17, 18, 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Veillette, US 3937533 in view of Boon et al., US 5227948. Veillette, US 3937533 discloses the invention substantially as claimed as set forth in the rejection of claim 1 or 27, supra. Veillette, US 3937533 does not expressly disclose, "... comprising current detecting means for detecting a value of the current when a constant current is caused to flow through the electromagnets." and "... wherein the current detecting means includes a resistance having one end connected to the negative



electrode, and a detection portion for detecting a current flowing through the resistance." Boon et al., US 5227948 discloses use of a current sensing resistor R4, see figure 4 for the purpose of providing a feedback signal. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use current sensing resistor in the device of Veillette, US 3937533. One of ordinary skill in the art would have been motivated to do this to provide a feedback signal to the controller.

Claims 22, 24, 34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Veillette, US 3937533 in view of Omori, US 6644938. Veillette, US 3937533 discloses the invention substantially as claimed as set forth in the rejection of claim 1 or 27, supra. Veillette, US 3937533 does not expressly disclose, "...wherein the rotor has rotary vanes and a rotor shaft placed at the center of the rotary vanes; and each of the electromagnets levitates the rotor shaft by a magnetic force." Omori, US 6644938 discloses the combination of a turbo molecular pump and magnetic bearings, for the inherent purpose of reducing operating friction and contamination of the pumped fluid. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use the device of Veillette, US 3937533 to support the pump of Omori, US 6644938. One of ordinary skill in the art would have been motivated to do this reduce rotational friction and contamination.

***Allowable Subject Matter***

Claim 25 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **DAVID W. SCHEUERMANN** whose telephone number is (571)272-2035. The examiner can normally be reached on Monday through Friday from 8:00 am to 4:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Quyen Leung can be reached at (571) 272-8188. The fax phone numbers for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Quyen Leung/  
Supervisory Patent Examiner, Art Unit 2834

/David W. Scheuermann/  
Examiner, Art Unit 2834  
1/7/2010